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# Lecture - 20
# Currency Swaps

Good morning, in session twenty we will be discussing about currency swap. In the early session, we have discussed about the management of transaction exposure, and in this process, we have discussed the forward contract. Then we have discussed about currency options, interest rate swaps and today's session, we will be discussing about currency swap. How currency swap can be a tool for management of transaction exposure. As I mentioned earlier transaction exposure arises, because the contractual payments which supposed to be in the form of different foreign currency change their value with the fluctuation of a, fluctuation of exchange rate. And in this process we have to manage the exchange rate fluctuation through different hedging product and in this, in the various hedging product available in the market, one such product is currency options.

In the currency options, we have discussed how the derivative market play a role in management of transaction exposure. There we have discussed currency options call and put options; this currency options a part of the transaction exposure management has some kind of drawback. The drawback in the form is that interest rate is borrowing and lending side, it may not help significantly rather export receivables or import payable, it may help in a significant manner.

But when borrowings or lendings are there, when companies ratings involves, when the borrowers have a preference for one market, have a privilege in another market, this currency options market may not be in a position to help them. And when company ratings are involved when long term borrowings are there and the borrowers are confined to one market, one country, they do not have any experience of other country and they when they want different kind of currency borrowings, in this process the currency swap helps a lot and for this as a transaction management tool, transaction exposure management tool we will be discussing about currency swap market.

And in this process while discussing the various features of currency swap we will be using the a practical, practical sides of a currency swap, how the currency swap actually

takes place among different currency, how the transaction or exchange of currency take place, how the exchange of interest payments are take place and also, also when the actually currency swap operate, what are, the what are the problems are there, what are the disadvantages are there, we will be discussing in the current session. Let us move to the currency swap.

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## Currency Swaps

- Swaps” literally means exchange. It means exchange of liabilities between two parties.
- A swap is a financial transaction in which two counterparties agree to exchange streams of payments over time.
- All swaps involve exchange of a series of periodic payments between two parties, usually through an intermediary which is normally a large financial institution which keeps a “Swap Book”.
- Swaps are customized contracts traded in the OTC market.

- Because swaps are OTC products, the risk of a counterparty defaulting is quite high and this is one of the major drawbacks of swap related product.

So, what actually meaning of swap? We discussed earlier session swap the literally meaning is exchange. Exchange means, here the here the exchange means the underlying asset. We are exchanging underlying asset. The underlying assets are may be assets or liability, on that basis swap design. A swap primarily is a financial in transaction in which two counterparty agree to exchange stream of cash flow over a period of time.

All swaps involves exchange of a series of periodic payments between two party, usually through an through an intermediary which normally a large financial institution which help in bringing the two party and maintaining the record of swap transaction what is, what we generally call swap books. Swaps are customized product and primarily swaps are OTC or over the counter product. They are customised as per the requirement of two party when you mention the OTC and customized product, the customization takes place on the value size of the swap.

The payment period, if it is annually, quarterly or the half yearly and also which of the currency involve in case of currency swap. On that basis we can design or customize the

swap as per the requirement of the two party. When you mention swap is a OTC product, the risk is quite high, a risk in the form of counterparty defaulting when one party default another party, it is create a default risk for the party, other party and in case of swap whenever there is a since it is a OTC product when the counterparty become default it create high risk and this is the one of the major drawback of swap transaction, whether it is a interest rate swap or currency swap. However, in many country the intermediary which is the financial institution generally a financial institution which act as a intermediary between two party they some they provide some kind of counterparty guarantee, but that kind of counterparty guarantee by the intermediary is rarely available.

So, swap transaction always have the drawback of counterparty default and however despite having a default the swap transaction is very useful in in exchange of what is called as a exchange of currency risk, in exchange of converting a interest rate or fixed interest rate to floating interest rate and vice versa. In also in case of currency swap it is very useful for company, the company which are not having a presence in different developed market they can they can exchange the currency of US dollar or Japanese yen or euro being a part of the developing country by going for a currency swap transaction with other party which are very much prevalent in developed country. Currency swap market is quite a tip and all long term borrowings are there generally take place through currency swap.

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## Foreign Currency Swap

- The first currency swap transaction took place in 1982 between the World Bank and IBM.
- A plain vanilla currency swap involves exchanging principal and fixed interest payments on a loan in one currency for principal and fixed interest payments on a similar loan in another currency.
- The parties to a currency swap will exchange principal amounts at the beginning and end of the swap.
- Currency swaps are generally resorted to by parties who need a different currency for financing assets but can raise resources in a different currency, in a different market on more competitive terms and with comparative advantage.
- Because of their market share and pre-dominant position, a company may be better known in one market and can raise resources at lower cost

The currency swap or the foreign currency swap if you analyse the history of the current currency swap, it is very recent. Nine, the first currency swap was transaction took place in 1982 between World bank and IMF, IBM. The first currency swap that IBM and World bank, IBM and World bank they sign the first currency swap. Swaps, it is a currency swap or interest rate swap, these are plain vanilla means there is no complexity involve in this process, the plain vanilla currency swap involve in exchange of principal and fixed interest payment on a loan in one currency, for a principal under a fixed interest payment for a similar loan in another currency. Here the underlying asset is currency, the currency at two different currency and the basic payments are principal exchange and also interest payment exchange which are denominated in two different currency.

That is a basic transaction process of a currency swap. So, currency swap the payments, payments involve the fixed principal payments and also the variable interest payment which involve in the transaction process of currency swap. The party to a currency swap will exchange principal amount at the beginning and end of the swap. When the swap actually take takes place that beginning of the swap therefore, two party exchange the principal and end of the swap the two party again exchange, reverse the transaction, exchange again the same principal.

However, till the validity of the swap they exchange the, exchange what is the cash flow which are, which is nothing but the interest payment. So, currency swap are generally, generally rejected to by party who need different currency for financing assets, but can raise resources in different currency in a different market on more competitive terms. Because currency swap the two parties are involve, one party, the two parties have a dominant play, rule in their own country in their own region.

However, they need, they can raise the resources say in their own region as a, as cheap as possible, but they are not in a position, they may need some currency of other country. So, in this process they exchange the currency and since they are dominant position in their own country, own region, they can raise the resources, their, in the form of their domestic currency in a cheap rate, but they are not in a position to raise resources from other country as cheap rate so they exchange the currency among themselves.

Swap transaction, swap transaction a beneficial for the two party because it not a zero sum game, it is a positive sum game where both party, both party get benefit out of the transaction process. Because of their market share or the predominant position a company may be better known in one market and can raise resources at lowest possible cost. And since the company a presence having their in domestic market on a particular country so they can raise resources in domestic currency very cheap, but they may not be in a position to raise resources in other country currency or a foreign currency at the cheap rate. So, they exchange their transaction and this process the swap books or swap transaction take place.

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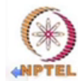
**Steps involves in Currency Swap Transactions**

- Exchange of equivalent amounts of different currencies.
- Exchange of periodic interest payments during the life of swap.
- Re-exchange of principal amount at a pre-determined rate on the maturity of swap.




If you, if you analyse the process of swap there are three different steps involve in the currency swap transaction process. First process exchange of equivalent amount of different currency, that is a principal transaction the two party agreed for to sign the swap contract. So, first transaction take place among them exchange of what is called currency that is a principal transaction. Then exchange of period periodic interest payment during the life of the swap the life of the swap, because they raise resources in the different currency. So, different interest rate, so they should exchange the interest payment also. The interest payment continue in a periodic term, periodic term within the life of the swap. Then re-exchange of principal amount at a predetermined rate on the maturity of swap. When the swap books close the swap period end then again re-exchange the principal or the fixed amount at a particular rate decided by them self. So,

that rate may be current rate, current prevailing rate that time or that may be some other rate as designed in the swap transaction process as decided in the swap transaction process.

So, there are three step in swap transaction. First step is the principal transaction, the two party agree to transfer the principal. Second step, the two party agree to exchange the periodic payment that is interest payment and then third step when the swap transaction closes that time they exchange the principal among themselves at a rate decided by them self which may be a current and that time prevailing rate or may be some decided rate as designed in the swap transaction process.

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## Example

A Japanese Company wanted to raise US$ loan but it is not getting good response in US market. At the same time, a US based company wanted to set up a manufacturing plant in Japan is not getting Japanese Yen at competitive rate in Japan. US-based Company can raise US$ at 5.5% from US market and the Japanese Company can raise Yen loan at 3.75% from Japanese market.

Illustrate with diagram the transaction of Currency Swap between the two Companies.

To understand the swap we have to, we have to go through different examples because without example you cannot understood, the process of swap, process of designing of the swap. Suppose, here a, I have given a example to you. A Japanese company wanted to raise US dollar loan, but it is not getting good response in US market. At the same time a US based company wanted to setup a manufacturing plant in Japan is not getting Japanese yen at competitive rate in Japan.

US based company can raise a US dollar at 5.5 percent from US market and the Japanese company can raise yen loan at 3.75 percent from Japanese market. Illustrate with diagram the transaction of currency swap between two companies. Here there beneficial process are there because two parties are involved, two parties are in disadvantage in,

they have advantage in their own country, but they have disadvantage in other each other country.

So, now they can go for a transaction swap transaction. So, here two party. One Japanese company, the company wanted US dollar, they, if they wanted to raise US dollar from US market they are not getting good response, another company in in US they that company wanted to have a manufacturing plant in Japan they need yen, but they are not getting yen as a competitive rate. So, the Japanese company can get yen in Japan at a cheap rate 3.75.

The US company can get US dollar in US at 5.5 percent as a competitive rate. Now, they can exchange the currency and they can sign a swap contract because both the swap contract would be beneficial to two party.

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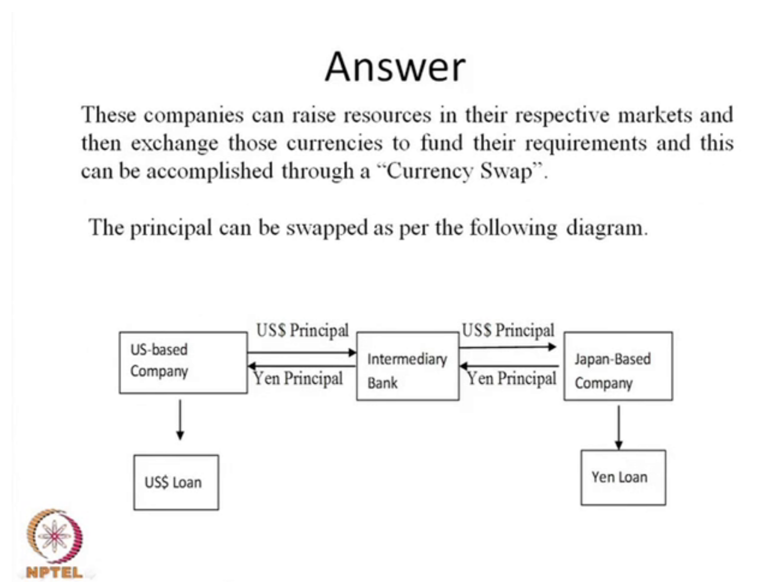


The, how the process will take place? The process may be in the form of like in the form of two transaction, one transaction is principal transaction, another transaction is interest payment transaction. As, I mentioned in in in the lecture when swap transaction takes place three different phases, first phase is the transaction of principal, second phase is a, exchange of what is called periodic payment that is interest payment and third phase re-exchange, re-exchange of principal at a determined rate.

So, first transaction the, this company can raise resources in their own respective market and then exchange currency to fund their requirement and this can be accomplished through swap currency swap. Japan, let the Japanese company raise Japanese yen at 3.75. Let the US company raise US dollar at 5.5 percent in US market, after that let them exchange the principal among each other as a and also exchange the interest payment among each other. In this process swap transaction can take place in the, after the maturity date both company re-exchange again principal, principal that is yen will be paid by, yen will be paid by the Japanese, yen will be paid by the US company and dollar will be paid by the, dollar will be paid by the Japanese company. In this process the swap, currency swap transaction can take place.

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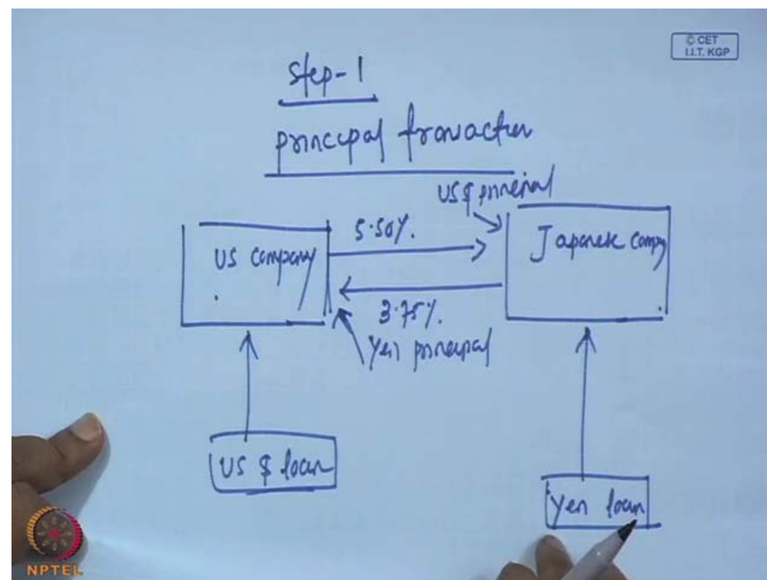


If you see, if you see the process here, the process is first the US company, first the principal transaction may take place. So, principal transaction first phase step 1. Step 1 the principal transaction. The principal transaction will take place in step 1. In the principal transaction what will happen? The two party will be there the US company and here Japanese company, so what will happen? This US company, US company will raise US dollar, US dollar loan and give the US dollar loan to Japanese company at the 5.5 percent and Japanese company will raise yen, yen loan, yen denominated loan and send, give this loan amount to US company at 3.75 percent. So, that yen principal and the principal transaction takes place here, yen principal, US dollar principal will go to the Japanese company and yen principal will go to the US company.

So, principal transaction yen principal will go to US company, yen principal. Will go to the, this principal will go to the US company and this US dollar principal, US dollar principal go to Japanese company. However, US dollar raised by the, US dollar loan raised by the US company in US market, Japanese yen loan raised by Japanese company in Japanese market.

So, these two principal transaction close here, but US company raise the US dollar at 5.5 percent, the dollar is going to Japanese company and hence Japanese company will pay the periodic interest of 5.5 percent US dollar interest rate, US dollar denominated interest rate and send, give the interest rate to US company. US company pay to the loan, those who have financed the loan. Similarly, in Japanese yen 3.75 percent interest rate which raised by the Japanese company and send and the principal has given to US company, US company need to pay 3.75 now. So, this will go to the Japanese company where it finance the Japanese loan.

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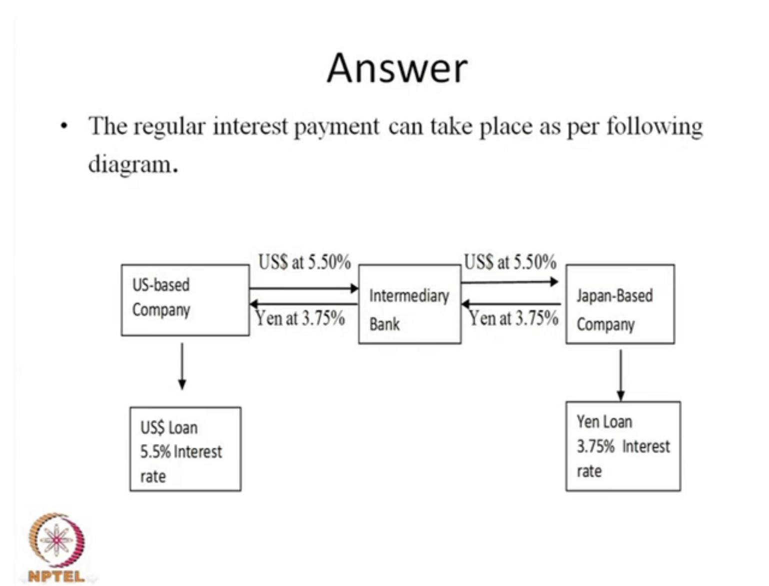


Well now, second phase is the phase of interest payment. Second phase is a phase of, now the swap transaction has taken place for principal side, step 1 that is principal swap.

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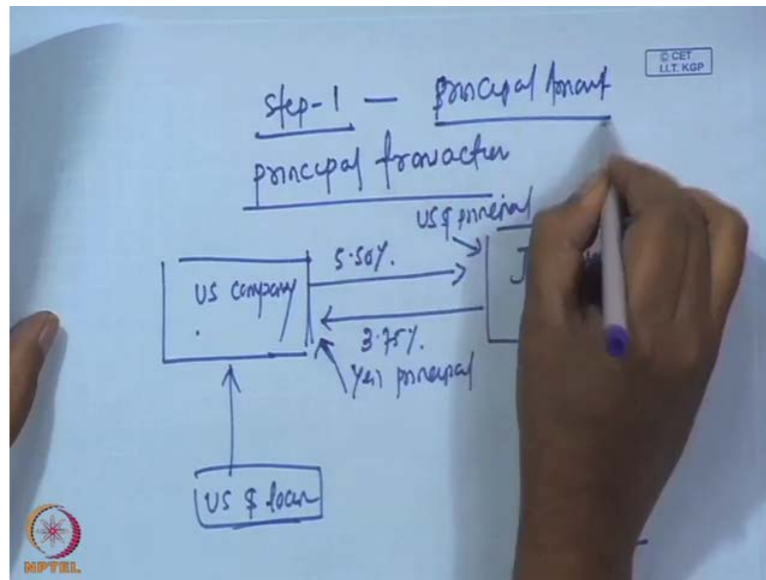


Here, principal amount swap, principal amount has been swapped.

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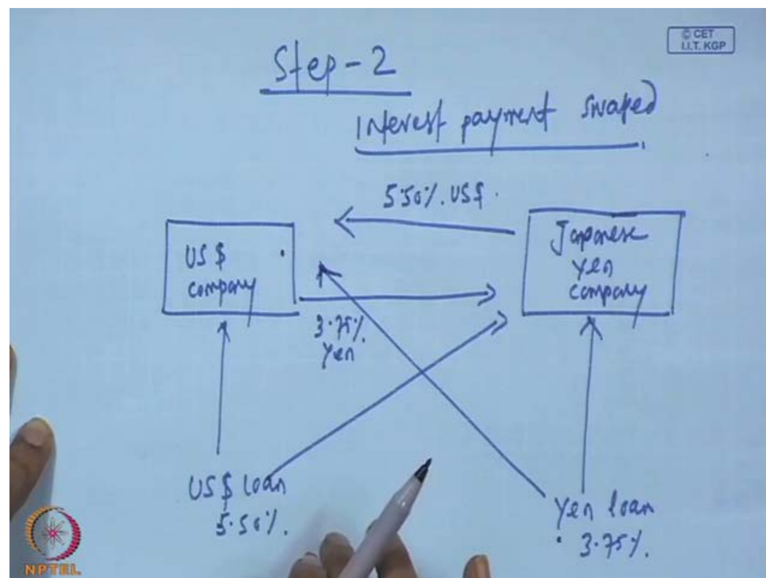


Now, second is periodic interest payment need to be swapped. So, periodic interest payment, so second step, step 2 step 2 involve interest payment swap. Interest payment swap, you have to understand that the interest payment will be respective currency main, denominated in respective currency. In Japanese yen it will be paid in Japanese yen only, in case of US dollar interest rate it will be paid in US dollar only. So, the currency the

currency exchange in in in in during the interest payment will be respective currency only.

So, the interest payment will take place what, the company here, here US company US dollar company, here Japanese yen, Japanese yen company. So, when, but US dollar raised by US company at what rate? US dollar loan at 5.50 percentage and here Japanese yen raised by Japanese company yen, dollar, yen loan at 3.75 percentage, but this yen has yen has been transferred to US company and dollar has been transferred to Japanese company.

So, the dollar has gone to here and yen has gone to here. Then who will pay the interest? So, for yen denominated loan the US company will pay the interest, for US dollar denominated loan the Japanese company will pay the interest. So, here transaction will be just reverse. So, here the Japanese company will pay 5.5 percent US dollar denominated interest, it will transfer to US company and US company will pay to the respective financier. Here same thing, but in case of, in case of Japanese yen, Japanese yen loan that is 3.75 percent of yen denominated loan, yen denominated interest rate paid by the paid by US dollar, US company and transferred to Japanese company. Japanese company again transferred to the respective financier. The transaction takes place in this way.

So, since US dollar, US dollar has moved to Japanese company, Japanese company will pay US dollar denominated interest rate that is 5.5 percent. Yen has been transferred to US dollar company, US company, will pay 3.75 percent of yen denominated currency to Japanese company. The reverse, this transaction is a interest payment, this will be periodic transaction till the swap is not, swap period is not over. They have signed a swap period of 10 years and they suppose to pay interest annually, this transaction will take place annual basis. And here the currency interest rate will be paid in respective currency only. So, there is no there is no need of conversion of currency yen to dollar or dollar to yen here. So, here the interest payment is periodic in nature.

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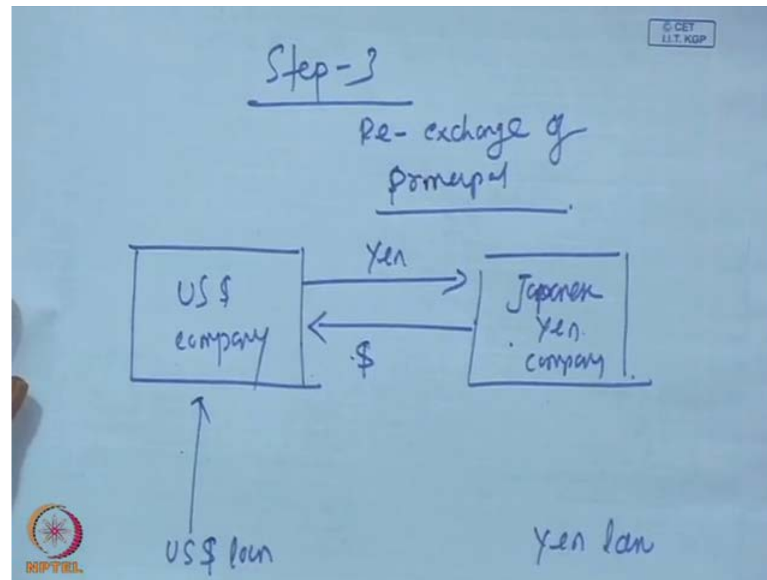


Now, since step 3, step 3 rearrange a re-exchange of principal after the swap period over, re-exchange of principal. So, here same thing re-exchange of principal will take place the two company will be here, a company. Now, re-exchange of, again swap will take place in principal payment after the US swap period over, the swap period over means the respective country respective company need to repay the principal.

So, Japanese yen loan. Now, US dollar company, Japanese yen company, so principal again what will happen to transaction? Reverse transaction takes place here because your transaction now step 3 principal re-exchange will take place or Japanese yen has taken dollar so he will transfer the principal amount of dollar to, principal amount of dollar to US company. US company has taken yen, here transfer the principal amount of yen to a Japanese company and the after receiving the yen, yen loan principal amount Japanese company will repay the loan principal amount loan, after receiving the dollar loan from Japanese company, the US company repay the principal to the respective company.

So, this reverse transaction takes place here. The earlier transaction if you see, earlier transaction was just opposite step 1, step 1 transaction was there where the principal was exchange. From US dollar the principal was going to Japanese company and yen, yen loan the principal was going to US company, but in step 3 the yen will be, yen will be transferred to Japanese company and dollar will be transferred to US company, reverse transaction of principal has a determined exchange rate.

Suppose that time the, suppose they decided that the yen, the dollar transfer will be, dollar transfer will be a current rate, the current rate they will transfer the rate. So, it is up to them how to decide the exchange rate of last final transaction process. Generally, the exchange rate decided by the prevailing market rate. Prevailing market rate they will decide the exchange rate. This is a process of transaction of currency swap, the process involves three step as I mentioned. The first step is principal exchange, second step is, second step is the exchange of periodic payment of what is called your interest rate and third, third step is involve re-exchange of principal at a determined exchange rate.

These are, this is the actual process of transaction of currency swap. All these transaction maintained by a, maintained through a swap book and the swap book will be handled by the intermediary, generally, generally a financial institution. In real world, in real world the party do not know each other, they come to their, a bank or a financial institution, financial institution provide a swap transaction to them.

So, they do not know the, who is the party they have provided the currency to them. So, it is a financial institution, who act as a intermediary and they maintain the swap book, they arrange the swap contract and also they get a fee for that that, commission for the swap transaction process. So, entire process transaction process takes place through a financial intermediary and big bank, very big bank they act as a swap transaction process and they act as a intermediaries, they maintain the swap running book and get their commission income for the swap transaction process.

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## Example

Company A, a U.S. firm, and Company B, a European firm, have 5 years debt exposures equivalent to $50 million. As on January 1, 2010, the exchange rate is $1.25 per euro. The dollar-denominated interest rate is 7.25%, and the euro-denominated interest rate is 4.5%. Arrange a Currency Swap and decide the payment after one year if, the exchange rate is $1.40 per euro as on Jan 1, 2011.

If you, if you do another transaction. Suppose, we will do another real example. Here, if you go through the example a company, company A a US firm, a company B a European firm have 5 years debt exposure equivalent to 50 million US dollar, both the company, company A US firm and company B a European firm they have 5 year debt exposure of equivalent to 50 million US dollar. As on January first 2010 the exchange rate is 1.25 dollar US dollar per euro.

The dollar denominated interest rate is 7.25 and the euro denominated interest rate is 4.50. Arrange a currency swap and decide the payment after 1 year if the exchange rate is 1.40 US dollar per euro as on first January 2011. A transaction process is what? There are two company, one company is US firm, another company is European company. They have 5 year debt equivalent amount of 50 million US dollar. As on January first 2010 the exchange rate between US dollar and Indian, US dollar and euro is 1.25 US dollar per euro.

The dollar interest rate is 7.25, the euro interest rate is 4.5, you have to arrange a currency swap and the currency swap as you have to arrange as on 2 January first 2011 when the exchange rate is 1.40 euro, 1.40 dollar per euro. So, here the two company, two different currency, the amount of transaction is 50 million. Two different interest rate, one is dollar interest rate, another is euro interest rate. Now, you have to arrange a currency swap.

So, currency swap first step. First step transaction of principal. What is the involvement of principal here 50 million US dollar, 50 million US dollar they have to transaction take place. Now, question is here who will, what is the transaction process principal? What is the amount of principal? 50 million, what is the euro equivalent of 50 million you have to decide about the euro equivalent of 50 million.

So, what is the current rate? Current rate is 1. 1.25. Decide how much can be 1.25, 50 by 1.25, that is the euro equivalent of dollar. Then after dollar will go to, dollar will go to the European company and euro will go to, euro will go to the US company, the principal transaction close here, but euro interest rate is 7.43 4.5, dollar interest rate is 7.25. Now, on this rate the interest payment takes place, after the end of the swap period the exchange of principal takes place, at what rate 1.40 euro per dollar, 1.40 dollar per euro on that rate exchange of principal will take place. So, three different step involve here. Let us start, let us do the problem.

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## Answer

- Company A, the U.S. firm, and Company B, the European firm, need to enter into a five-year currency swap for $50 million. First the principal will be exchanged.
- Since the exchange rate, at the time of swap arrangement, is $1.25 per euro, Company A pays $50 million, and Company B pays Euro 40 million (50/1.25).
- Company A will borrow from US market US$50 at a rate of 7.25% and Company B would borrow from Euro market Euro 40 million at the rate of 4.5%. This satisfies each company's need for funds denominated in another currency, which is nothing but currency swap.

Now, first problem, transaction of currency; so company A is US firm and company B is Europe firm. Now, 50 million is the principal amount, the principal amount is 50 million. So, what is the equivalent of principal?

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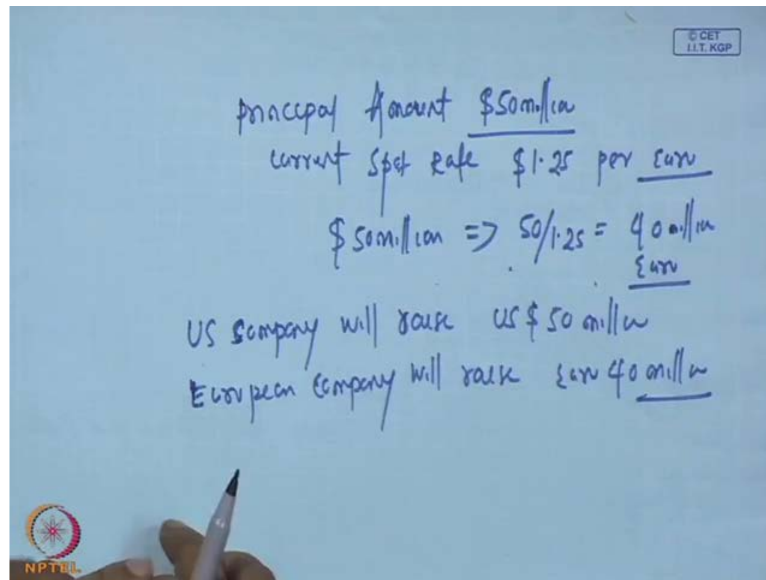


So, 50 million, 50 million principal amount, principal amount is US dollar 50 million. Current rate, current spot rate, current spot rate is 1.25 dollar per euro per euro, the, what is the equivalent of 50 million dollar, 50 million, 50 million US dollar is equivalent to, equivalent to how much 50 by 1.25, 50 by 1.25 that is 40 million, 40 million euro because current rate is 1 euro is 1.25. So, equivalent of 50 million dollar is 40 million US euro.

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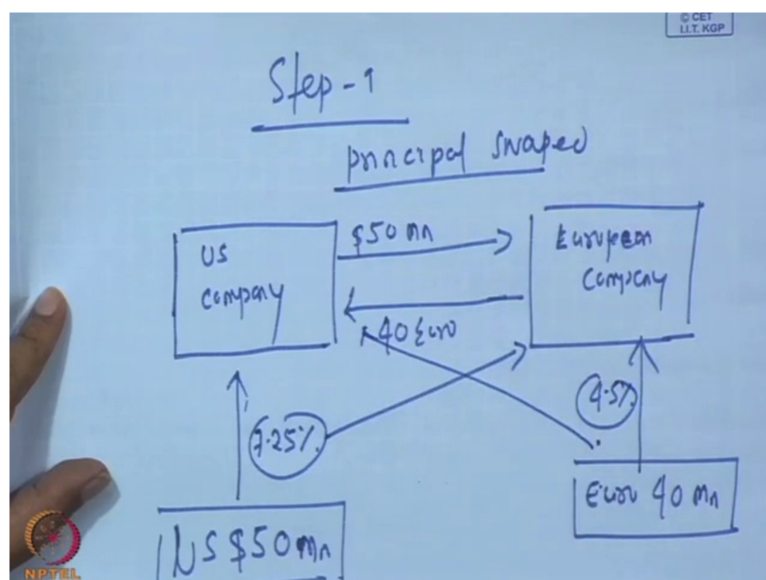

Now, question is who will raise what? The US, the US company will raise, the US company US company will raise US dollar 50 million and European company will raise euro 40 million, euro 40 million because 50 million equivalent of 50 million dollar equivalent to 40 million euro. Now, after that the transaction takes place among these two. Now, question is first transaction will be what? Principal transaction step 1 principal swap. So, here you draw the diagram, US company and European company, US company will raise how much? US dollar 50 million and Japanese, European company will raise euro 40 million, then what European company will sell the euro to 40 million to 40 million euro to the US company, US company sell that, exchange that 50 million US dollar to Japanese, European company principal over the 40, 50 are same amount, equivalent amount same.

So, transaction the US company raise 50, will raise from the US market 50 million US dollar, European company will raise from the euro, European market 40 million euro, the 40 million euro they will exchange, send to the US company and US dollar 50 million will be sent to the European company, the principal transaction over. Then question is here, the European company, Japanese your US company raising 50 million US dollar at what rate 7.25 percentage and European company raising euro 40 million at 4.5 percent interest rate and second transaction who will pay 7 US dollar interest rate? European company because they have got the US dollar. Who will pay 40, 40 million euro, euro loans interest rate, it has gone to US company? US company will pay.

So, the interest transaction will take place 7.25 percentage of US dollar interest rate will be paid by European company and 4.5 percent of euro loan interest rate will be paid by the European US company. The transaction of second transaction that is step 2 transaction of interest payment will be like that.

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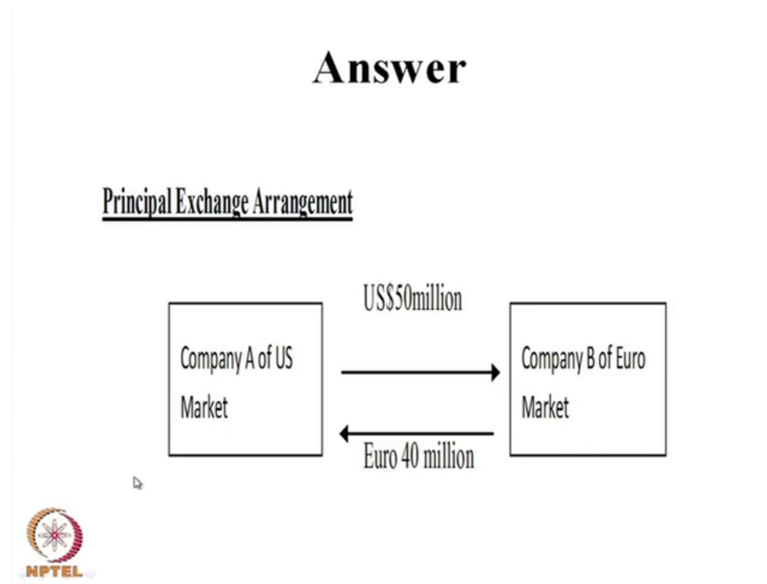


So, if you see that diagram here, the US company A US market he will raise 50 million, send to company B European market, an European, then European company B will raise 40 million euro and give it to company A in US. The principal transaction is over, as I mentioned here.

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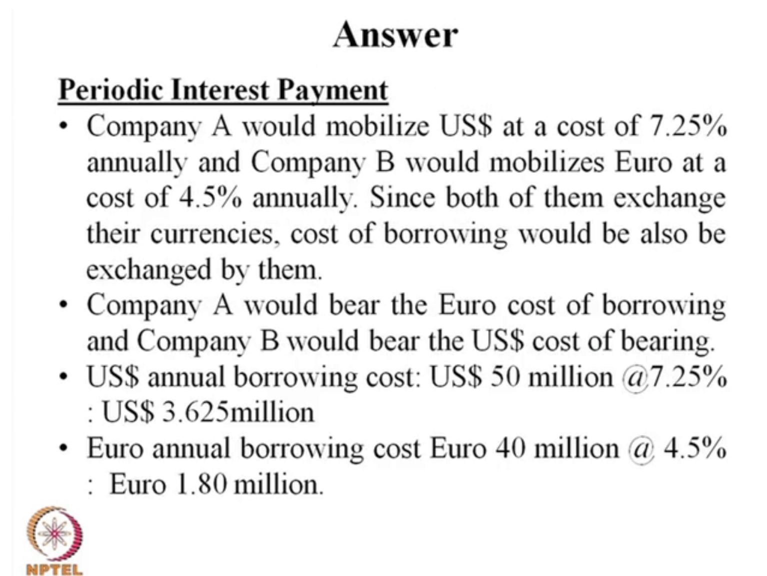


Now, second transaction second step will be will be our will be our interest payment transaction.

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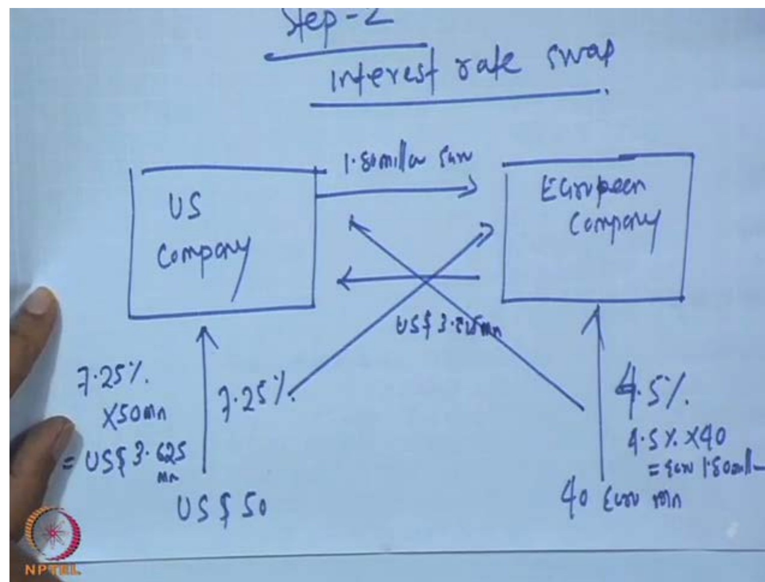


Second step, interest rate transaction or interest rate spot, interest rate spot now same thing. Here, US company, here European company. Europe company have a, US company has a raised 50 million US dollar at 7.25 percentage and European company has raised 40 million euro, euro 40 million at 4.5 percent.

So, now the interest rate transaction will take place. So, interest rate transaction and as I mentioned the 4.5 percent will be paid by US company and 7.25 will be paid by the European company. Now, what are the, what is the amount here? Amount here, every year the transaction will take place. Suppose, a annual transaction of interest rates are involved, periodic payment is annually, annualised. So, annual transaction will take place. So, what is the interest rate?

The interest rate company A will pay if you do in a calculation process the interest rate of 40 50 million into 7.25. So, 40 million into 7.25 7.25 into 50 million, 50 million is US dollar, is US dollar equivalent of, US dollar equivalent of 3.625 million, 7.25 of 50 million is 3.625 million US dollar and 4.5 percent of 40 million euro will be 4.5 percentage into 40.

So, that is equivalent to euro, that is equivalent to euro 1.8 million. So, company A, company, US company will pay how much interest? Interest amount will be, interest amount to European company, how much interest? 1. 1.80 million euro, euro and European company will pay how much? European company will pay US dollar 3.625

million, that transaction will take place and what is the rate thus they have to pay only in respective currency only. So, they will, US company will pay 1.8 80 millions of euro to European company and European company will pay now 3.625 US dollar, million US dollar to to US company. What is the rate they will pay?

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## Example

Company A, a U.S. firm, and Company B, a European firm, have 5 years debt exposures equivalent to $50 million. As on January 1, 2010, the exchange rate is $1.25 per euro. The dollar-denominated interest rate is 7.25%, and the euro-denominated interest rate is 4.5%. Arrange a Currency Swap and decide the payment after one year if, the exchange rate is $1.40 per euro as on Jan 1, 2011.

The rate is already given to you, the rate is 1.40 per dollar, 1.40 per euro. The transaction, the interest payment transaction will take place what rate?

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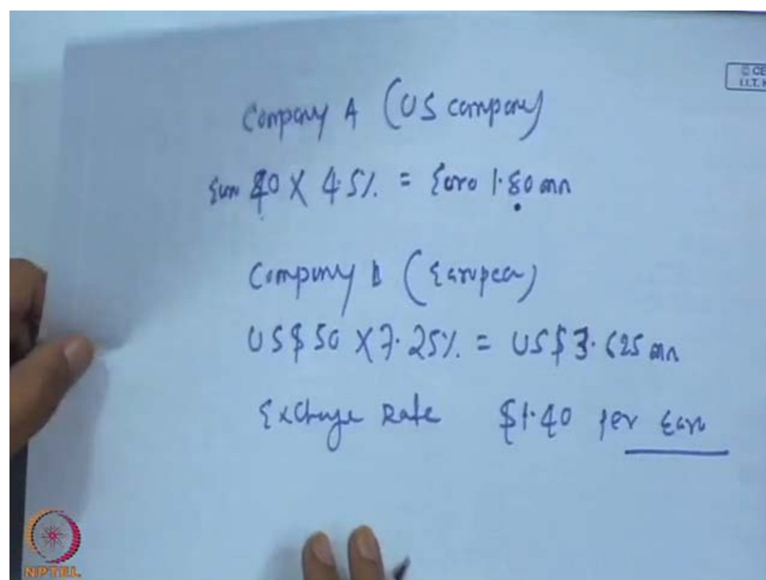

So, company A, company A that is US company, US company will pay 50 million, 40 million euro 40 million into 4.5 percent that is euro, euro 1.80 million and company B, company B that is European company they it will pay US dollar 50 million into 7.25 percentage equivalent to US dollar 3.625 million.

So but the exchange will be exchange rate, exchange rate will be 1.40 per euro per euro; so 1.40 per euro the transaction will take place at this rate and company A will send 1.80 million of euro to company European company and European company will pay 3.625 million to the company B which is company B that is company A that is a US company. The transaction will take place in this way.

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## Answer

- As on Jan 1, 2011, exchange rate is US$ 1.40 per Euro and hence Euro 1.80 million is equivalent to US$ 2.52 million.
- Hence the interest payment would be :
  - Company A would pay US$ 2.52 million to Company B
  - Company B would pay US$3.625 million to Company A
  - Hence the net US$ 1.105 million would be paid by Company B to Company A
- At the end of the swap of period both the parties re-exchange the original principal amounts.
- These principal payments are unaffected by exchange rates at the time.

And step 3 transaction step three transaction is nothing but that step 3 transaction is nothing but, the principal payment, principal payment will be there in step 3 transaction process.

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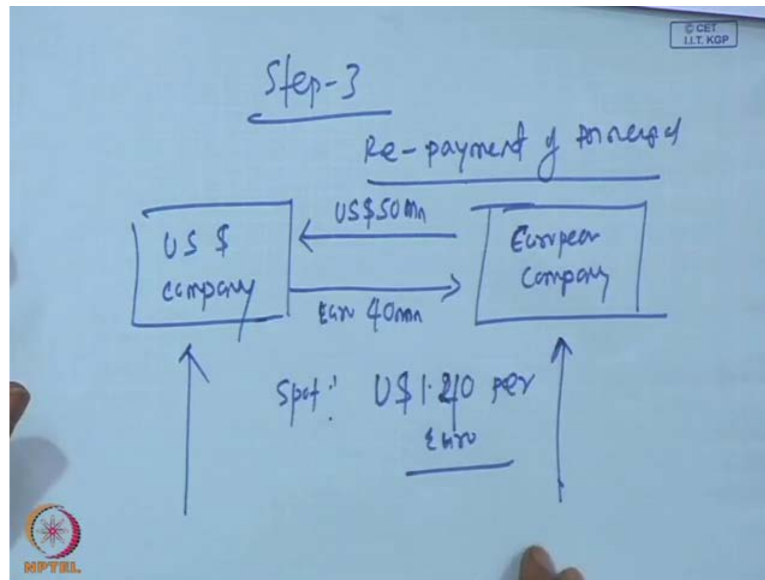


A step 3, transaction process, same step 3 re-payment of principal, re-payment of principal. Now, as I mentioned earlier the company A and company B, a company A US company, US dollar company, company B will be your European company, European company, the principal transaction will take place. The principal transaction, the European company will repay US dollar 50 million and US company will repay euro 40 million and 40 million and spot rate, the rate of transaction take place for US dollar 1. 1. 1.40 per euro.

The rate of dollar takes place 1.40 euro. The euro now 1.40, so 1.40 euro, the prevailing rate is 1.40 euro that rate 1.40 dollar per euro that rate the transaction takes place. What does it mean 50 50 million European company will pay dollar 50 million to US company, US company repay euro 40 million to European company at the rate of current transaction rate of 1.40 per 1.40 dollar per euro. That means 1.40 into 50 million, 1.40 into 50 that will be transaction for European side and 50 divided by 1.40 that will be European transaction for dollar side. So, that is the transaction last step 3 transaction rearrangement of principal amount will be there.

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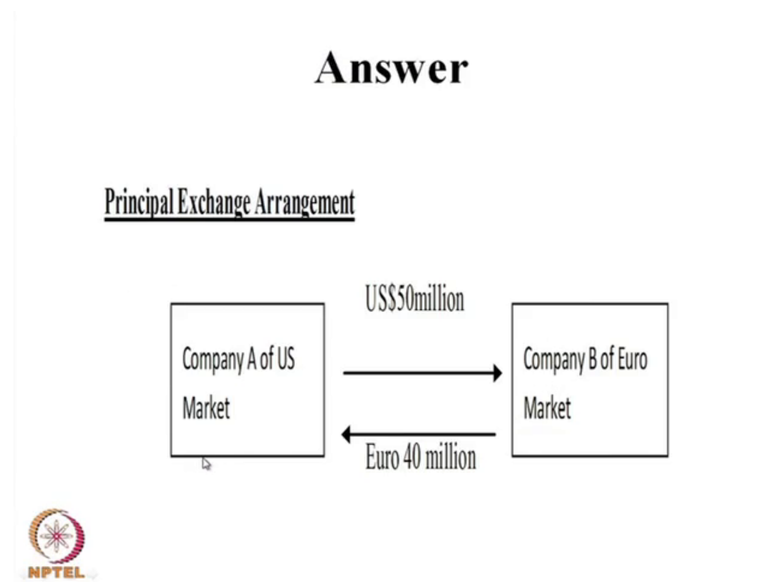


So, now this is the process of what is called transaction of, what is our currency, currency swap.

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## Answer

- As on Jan 1, 2011, exchange rate is US$ 1.40 per Euro and hence Euro 1.80 million is equivalent to US$ 2.52 million.
- Hence the interest payment would be :
  - Company A would pay US$ 2.52 million to Company B
  - Company B would pay US$3.625 million to Company A
  - Hence the net US$ 1.105 million would be paid by Company B to Company A
- At the end of the swap of period both the parties re-exchange the original principal amounts.
- These principal payments are unaffected by exchange rates at the time.

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Currency swap as I mentioned there are three different transactions takes place. One transaction is principal transaction, second transaction is a periodic interest payment transaction and third transaction is again repayment of principal, so, at a contracted rate. So, question is here what way, what the process involve in currency swap. Currency

swap the process is process is too different process, first process is a interest rate swap, second process is a currency principal swap.

So, currency swap it still composed of interest rate swap and currency swap together and in this process it is helpful in particularly long term borrowing of corporate, the corporate at inexperience in other country compared to their own country. They can raise resources in their own country, own domestic money, but they when required foreign currency from other country there may be disadvantage, so they go for a currency swap side which is helpful for them in getting cheap resources. And this currency swap generally takes place through a intermediary. An intermediary in real life is the financial institution who maintain the swap record or swap book.

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## References


- International Financial Management, 3rd Edition, by Eun and Resnick, Irwin, 2004.
- Multinational Financial Management by Jeff Madura, Thomson Publications
- Multinational Financial Management, by Alan C. Shapiro, Wiley India, 8th Edition.

To understand further swap, transaction currency swap transaction you can go through. References are here, you can go through this Eun and Resnick international financial management, you can go through the multinational financial management by Jeff Madura and also you can go through multinational financial management by Alan Shapiro. So, there we will be in a position to understand further what is the actual process of transaction of currency swap, together it is a references for you.

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## Model Questions

1) Discuss with examples and diagram the features of Currency Swap.
2) You enter into a 5-year fixed-for—fixed currency swap to receive a cash flow stream in British pounds and to pay cash flow stream in US dollars. The swap is an at-market swap based on a notional principal of $1 million. What are the cash flows of the swap if the 5-year market yields are 5.50% for US$ and 9% for British pounds and the spot Fx rate is currently 1.50 dollar per pounds.

If you, the model question I have framed two different question. One is theoretical question, another is here another is a problem for us. In theoretical question you can discuss the, with example and diagram, futures of currency swap. So, here you discuss how the currency swap features are there, which are features primarily the currency swap you have to mention that currency swap there are two different swap together in currency swap. One is a interest rate swap another is currency exchange swap.

In case of currency swap the two party they exchange the currency, principal amount in the first step, second step they exchange the periodic interest amount and third step they exchange re-exchange again the principal and what way it will beneficial for the two party you have to outline that. The two parties are in different country so they have advantage disadvantage in raising the foreign currency and they have the advantage in raising the resources in their own country cheap amount, they have disadvantage raising resources from other country at cheap amount.

So, they exchange the currency among themselves. The currency transaction take, currency swap transaction take place through intermediary. The intermediary arrange, arrange a swap transaction between two party. A two party may not know each other however, however through the financial institution they come and they meet, they sign the contract and in the process of contract they, in the process of contract they arrange the currency swap transaction, transaction among themselves. You have to mention that

in currency swap transaction how actually transaction takes place three different transaction takes place. You outline the three different transaction with within with diagram.

Now, second question is here a problem aspect. You enter into a 5 year fixed rate fixed for fixed currency swap to receive a cash flow stream in British pound to pay cash flow stream in US dollar, the swap is an, the swap is at market swap based on a notional principal of 1 million. What are the cash flow of the swap if the 5 year market yields are 5.50 for US dollar and 9 percent for British pound and the spot exchange rate is currently 1.5 dollar per British pound. Here, question is 5 year fixed for fixed currency swap. So, here notional amount is 1 million, US dollar rate is 5.5 and pound sterling rate is 9 percent. You have to create a cash flow stream for arrangement of this currency swap.

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## Answer : Question 2

- The cash flow stream you would pay consists of interest payments of US$55,000 for $ 1million @ of 5.50% per year for five years, plus a final principal payment of $1 million.
- The cash flow stream you would receive is based on a sterling- denominated bond with a principal amount equal to the pound equivalent of $1 million, given the spot FX rate of 1.50$/£.
- Thus, the principal on the sterling bond is $1 million /1.50 = £666,667. At a coupon interest rate of 9%, the sterling cash flow receipts consist of interest components of 9% * 666,667= £60,000 per year for 5 year and a principal component of £666,667 at the end of 5th year.

What the process involved? The process is here the cash flow stream you would pay consists of interest payment, the 1 million 1 million interest for 5.5 US dollar is 55000 dollar and for 5 year plus principal amount 1 million. The cash flow stream would be received based on the sterling denominated bond with principal amount is equivalent to 1 million. In case of sterling pound sterling side the dollar equivalent will be 1 million at exchange rate 1.5.

The principal amount will be 66 triple (( )) that is will be 666667 pound sterling and the coupon interest rate is 9 percent. So, 9 percent of the equivalent is 60000 pound sterling.

So, 5 year and the principal amount is at the fifth year. So, here there is a fixed, two parties are there, two different transactions are there. One transaction involve in pound sterling another transaction involve in US dollar.

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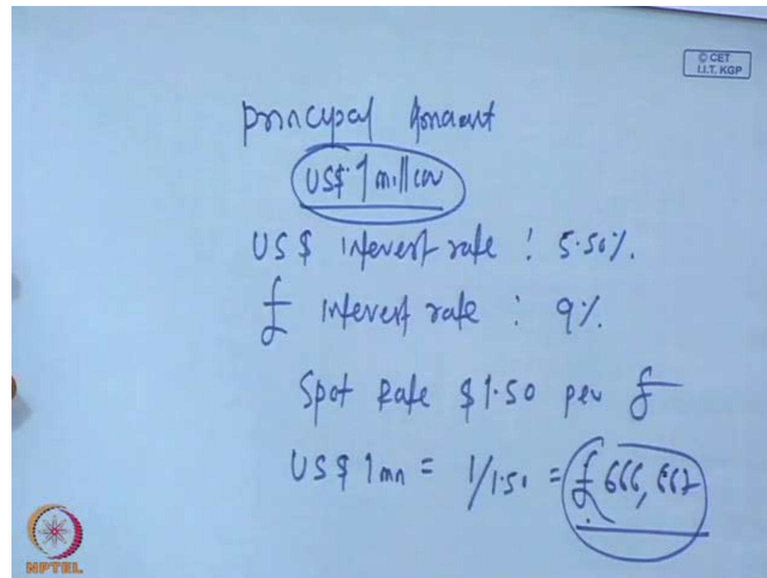


Though the principal amount here, principal amount is 1 million 1 million US dollar. So, US dollar interest rate, interest rate is US dollar interest rate is 5.50 percentage and pound sterling interest rate is 9 percent, but 1 million of US dollar is equivalent to how much pound sterling. The exchange rate is exchange spot exchange rate, spot rate spot rate is 1.50 dollar per pound per pound sterling.

So, what is US dollar, US dollar 1 million equivalent to 1 by 1.5 that is pound sterling equivalent to 666667, this is the equivalent of here. This is the principal, the principal transaction is, this is the principal amount 1 pound sterling and this is the principal amount of US dollar, the transaction takes place after 5 year, this is the principal transaction.

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Now, what will be the interest transaction? Interest transaction in US dollar will be at rate of 5.5. So, US dollar 1 million into 5.5 that is equivalent to US dollar 55000 every year per year, for how many year, the transaction is for 5 years similarly, for pound sterling interest rate that is 666667 into here pound sterling 9 percent that is equivalent to pound sterling of how much 60000 per year for 5 year.

So, the company two different transaction cash flow, one is 1 million US dollar after one 5 year they have to repay the 1 million u s dollar and every year 55000, 55000 US dollar as the interest amount. Similarly, for equivalent of yen, equivalent of pound sterling it is at the rate of 1.5. So, equivalent of principal amount is this and 9 percent interest rate in pound sterling 60000 every year equivalent amount. This is the final transaction and cash flow among the two party. The two party will transact the cash flow every year 55000 pound sterling 55000 dollar and 60000 pound sterling in the form of interest. At the end of 5 year 1 million US dollar and 666667 pound sterling, pound sterling will be exchange as per the principal exchange.

Thank you, you can read more further for currency swap in as the references given to you.